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EDITORIAL

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Recommendations for an Australian Federal Communications Commission

On 5th May in the House of Representatives during Grievance Day debate, the Honorable A. Fairhall, Federal Member for Paterson (N.S.W.), directed a recommendation to the Government that consideration be given to the establishment in Australia of a counterpart of the American Federal Communications Commission, and as a first step towards this end that the Government invite to Australia one of the American commissioners to advise as to how this problem should be tackled.

The American F.C.C. is an independent body empowered to deal with all communication problems in the United States of America including the allotment of operating frequencies to the various communication services.

The Amateur Service—which vitally interests us—is administered by the F.C.C., but in a far different manner to that existing in this country. Under an independent Commission the American Amateur has considerable say in his own affairs as a recognised international frequency user. Proposals to make variations in regulations governing the operation of Amateur Stations are published in a Federal Register wherein all interested parties are invited to file comments for or against the proposal(s). The Amateurs are thus given the opportunity to give expressions of opinion in matters which concern themselves.

Proposals may be originated by the American Radio Relay League (the representative body of the Amateur Service) in the form of a petition to the F.C.C. But whether such proposals are originated by the F.C.C. or the A.R.R.L., the F.C.C. issues a document of proposed rule making which is published in the Federal Register, and it is only after individual and institutional comments have been thoroughly exam-

ined by the Commissioners (who are not themselves frequency users) that any order to amend Regulations under the Communications Act is implemented.

The American Communications Act incorporates Amateur regulations along with regulations governing the operation of all other frequency users and these are legally binding until such time as they are amended by a properly constituted procedure by which the frequency users have a powerful say in their own affairs.

Because Australia is a growing Nation with a bigger voice in international affairs, its system of dealing with communications, whilst having served satisfactorily since the introduction of radio as a communication media, is fast outgrowing its usefulness and is in dire need of complete overhauling.

The Wireless Institute of Australia as the nationally constituted organisation representing the internationally registered Amateur Service in Australia commends Mr. Fairhall for his stand on this matter and looks forward in the hope that the Australian Government will see the wisdom of his recommendation.

In the meantime the Postmaster-General, Hon. C. W. Davidson, O.B.E., has said that he will form an Ad Hoc Committee with wide constitutional facilities so that all the interests involved with the use of frequencies will have an opportunity to present their cases. In this regard Mr. Davidson has said that the Wireless Institute of Australia will have actual representation on this Committee and not merely be invited to send an observer. The W.I.A. assures all Australian Amateurs that it will be pleased to represent their interests on this Committee when it is formed.

FEDERAL EXECUTIVE.

In Defence of Amateur Frequencies

For the information of Amateurs generally, we print herewith extracts from Hansard (5th May, 1960) indicating the support that has been given to Amateurs by Mr. Fairhall, M.H.R.; Mr. Costa, M.H.R.; and Mr. Wentworth, M.H.R.

Mr. Fairhall (Paterson).—Mr. Speaker, twelve months ago, the subject of the availability of frequency reservations to amateur radio operators in this country was a matter of hot concern in both Houses of this Parliament and on both sides of the Parliament. In the light of known proposals for the reduction of the frequency channels which the Postmaster-General's Department proposed to send on for consideration at the International Telecommunications Union Conference, in Geneva, last year, that was a reasonable thing. But I think it is timely and necessary to raise the question again, because, presumably, in the near future, the Government will have before it a submission from the department dealing with the results of the Geneva conference and moving for some form of ratification, as may be required. Therefore, cause a good deal of discontent over the outcome of the Geneva conference still lingers, I consider that there are some important matters which ought to be brought to the attention of the Government, and, perhaps, to the notice of the people of Australia, Sir. These matters are not confined only to amateur radio, and what has happened in this field gives rise to wider considerations.

I do not want to say much about the value of the amateur radio operator in peace and war—I think that is well understood—or, indeed, about the fact that amateur radio represents a training ground for electronic technicians in this country which is particularly valuable in view of the few opportunities available for obtaining experience of that sort. I propose also to pass lightly over the recognition given to radio amateurs, because it is well known that they are regarded as an international group, and that reservations have been made for them on an international basis by the International Telecommunications Union.

In the United States of America and the United Kingdom, amateur operators are considered of such value that the delegations sent to the Geneva conference by those countries fought hard, and, I am happy to say, retained for their amateurs the whole field of reservations for amateur operation. In the United Kingdom, amateur radio is encouraged as a source of operators for signals branches of the defence services, even to the degree that the Government provides equipment and pays something towards the cost of its maintenance. In Australia, in recent years, the president of the Wireless Institute of Australia—the organisation of amateur operators—was awarded an O.B.E.—the award of admission as an Officer of the Order of the British Empire—in recognition of the splendid service given by the amateurs of this country during floods and bush fires on many occasions when the communication

facilities provided by the Postmaster-General's Department had been disrupted for some reason.

For years past, the Australian amateur has had available to him fewer frequency channels than are available to amateur operators in other English-speaking countries. In this connection, I wish to draw attention to a statement made on 7th May, 1959, by the Postmaster-General (Mr. Davidson). He said—

... my advice—and it is the best advice—is that Australian radio amateurs do not suffer by comparison with our American friends.

That statement is demonstrably untrue, Sir, and it can readily be tested. I have done that. The useful bands available to Australian amateur operators represent only 35 per cent. of those available to the American operators. On the channels best suited to international communication, which is the very life blood of amateur radio, they are restricted to 56 per cent. of those available to the Americans. If the Geneva conference decision is to be put into operation, including a restriction, applicable to Australia only, to which I shall refer presently, we shall be down to something like 50 per cent. of the space available to the Americans. Nor does that tell all the story, because the Australian amateur suffers disadvantages in respect of power and other matters as a result of conditions imposed on them by the Postal Department.

The point to which I wish to direct attention, and which I should like the Postmaster-General to note, is that when this matter was one of hot concern twelve months ago, honorable members on both sides of the House were given an undertaking, which I must accept as coming from the Minister's own department, that the Australian amateur would lose nothing further by way of frequency reservations unless such restrictions were demanded by the International Telecommunications Conference at Geneva.

Let me illustrate by taking one point—the band of frequencies available to amateurs on 80 metres. The Australian delegation took forward a proposal to reduce the Australian allocation from 300 kilocycles to 200 kilocycles. They put it before the conference, and we had no objection, but the conference rejected the Australian proposal. One would assume that that would be the end of that, but no, the Australian delegation then included what is called in convention parlance a "footnote". The footnote interposed into the articles of the convention the Australian restriction down to 200 kilocycle bandwidths. The inclusion of this footnote in the proceedings of the Geneva conference was, as I see it, and as many other members of this Parliament will see it, a repudiation of the undertaking given to the Parliament.

I hope that this does not indicate a state of mind in which this Parliament is to be held in contempt by a government department. I should like to hear what the Postmaster-General has to say about this. For my part, I cannot see

that this was other than a premeditated act of bad faith on the part of the administration. As such, I find it completely intolerable.

Various reasons have been put forward why Australian amateur reservations must be reduced. We have been told that there is a rising demand for frequency channels for other communication services. Of course, that is perfectly true. Quoting the Postmaster-General's own figures in relation to the aeronautical field, the applications have risen from 59 to 172; but in this field, the United States of America manages to operate 81,000 transmitters. Some of our members were concerned that if the amateur bands were not reduced, there would be no room available for the operation of bush fire radio equipment; but in the closest counterpart of this service that I could find in the American table, I find the Americans can operate no fewer than 92,000 transmitters.

This takes me out of the field of amateur frequencies altogether, and it brings up a wider question as to what is happening in frequency allocations in Australia. In times past, I have made the point that we should have a counterpart in Australia of the American Federal Communications Commission. I know that the Postmaster-General has indicated that quite shortly we are to have another committee in Australia to examine the broad question of frequencies. I want to put to the Minister two propositions: One is that we should consider the establishment of an administrative body similar to the American Federal Communications Commission, and towards that end it might not be a bad thing for the Government to invite to Australia one of the American commissioners, and to seek his advice as to how this problem should be tackled.

I put this seriously to the House and the people that, in Australia, one of our most valuable public possessions will be the ownership and availability of channels or communication in a big country; yet what have been given as the reasons for doing the things to which I have referred? We find that we, in Australia, have virtually exhausted the availability of communication channels with something under 50,000 transmitters, yet in a country of the same physical size, and having access to widths of frequencies identical with ours, the American administration is able to operate something like 1,400,000 transmitters. I say again that this is a vital matter, because I am not at all convinced that this question of frequency allocation is being administered in the public interest. When one sees a comparison of that kind—that we can operate only 4,000 transmitters in an area which can accommodate almost 1,500,000 in America—we are seriously invited to consider the efficiency of our handling of this particular problem.

But, Sir, if I may get back to the question of amateur radio, there is no sustainable reason why the amateurs of Australia should suffer further reductions in their wave bands. On the contrary, there is good reason why a

reasonable administration should restore some space that has been withheld or withdrawn without justification. Sir, I should like to have the Postmaster-General devote his attention to this matter and give me some advice as to how far we are committed by the Geneva agreement in its present form, what facilities there are for amendment or change in the conditions involved in it, and also whether the Government will look at this matter again with a view to giving some relief.

Mr. Costa (Banks)—I wish to support the honorable member for Paterson (Mr. Fairhall). I think that the point of view he has put to the House has the support of all honorable members. I support his protests because I believe there should be ample channels available for radio amateurs, to whom we owe quite a lot. They pioneered the radio industry in Australia and they deserve our support. I oppose the restrictions that have been suggested by the Geneva conference.

Mr. Davidson (Dawson): Postmaster-General.—Normally, on Grievance Day, it is not the practice for Ministers to take up any of the time of the debate. Honorable members greet that statement with noisy interjections, but if they will allow me to make a few remarks they will find that I have risen, first because I want to make a few comments in reply to the speech of the honorable member for Paterson (Mr. Fairhall), and secondly, because the honorable member for Macarthur (Mr. Jeff Bate) also asked me to make some comments on that matter and was good enough to offer me his time in this debate so that I might do so. I appreciate that action of the honorable member.

As only a few minutes remain of the time allotted for this debate, I shall not attempt to reply to all the points made by the honorable member for Paterson. He has discussed with me on many occasions the matters he has raised today. Therefore I have an understanding of his point of view, and he understands my attitude. There are some things on which we differ and some on which we agree. I differ with him in respect of the charges he has made of repudiation and bad faith and his criticism of the attitude of departmental officers. Certainly the departmental officers have not agreed with all the proposals which have been put forward by the representatives of the amateur institute, but I think it must be conceded that a good deal of co-operation and consideration has been given by the department in the matters put forward by those representatives in discussions at both Canberra and Melbourne, and also by the appointment on behalf of the institute of an observer to travel with the delegation which went to Geneva. I should also like to point out—and this point has been raised by me before—that prior to the delegation leaving, I submitted a proposal to Cabinet outlining the attitude that would be adopted by the delegation. Therefore, if there is any comment or criticism in that respect it should be directed not at the departmental officers but at myself.

I particularly want to refer, in the next two or three minutes, to the present position and to our future planning. I think that is particularly what the honorable member for Paterson wants me to do. I have just received a summary of the portion of the report of the delegation to the Geneva talks which deals with frequencies allotted to amateur radio operators. It is my intention, very shortly, to submit this report to Cabinet for its consideration, and I can assure the House and the honorable member that any decision taken will be one of policy. I cannot anticipate what that will be. But before anything further is done, I shall recommend that a committee be set up to inquire into the matters referred to by the honorable member for Paterson. I propose proceeding with that on a very wide basis. There need be no fear, first of all, that any action which the amateurs might consider would hurt them will be taken immediately or without further opportunity being given for discussion. Secondly, any committee appointed to inquire into the whole range of frequencies in Australia will have a very wide constitution so that all the interests involved in the operation of frequencies will have an opportunity to present their cases. When I say that I mean, for example, that the amateur institute will have actual representation on the committee and not merely be invited to send an observer.

The honorable member for Paterson has suggested that his investigation should be wider and that we should set out to develop something in Australia of the nature of the Federal Communications Commission which operates in the United States of America. I am not very much attracted to that proposal at present; but I would be quite prepared to have a look at it, and if necessary, discuss it with Cabinet to see whether it thinks that a committee of that nature should be established. For the present, I fancy an ad hoc committee, which would not be appointed as a permanent body, would be the best means to deal with this matter with reasonable celerity.

Mr. Wentworth—My question to the Postmaster-General relates to the International Telecommunications Conference which was held last December in Geneva. Was any agreement or convention entered into on behalf of Australia, or was anything done which was in any way binding on Australia? If so, will the Minister, before we go into recess, lay on the table of the Library for the information of honorable members a copy of the undertakings which were given?

Mr. Davidson—Certain determinations were made by delegates to the Geneva conference, and those determinations were noted. But there has been no ratification by this Government of any of the decisions which were arrived at. Yesterday I received a summary of that part of the overall report which deals with amateur radio operators. It is my intention shortly to submit that summary to Cabinet for consideration and determination as to what further action should be taken. When such determination is made it is my intention to make a statement on the matter to the House.

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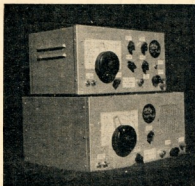
SYNCHRONOUS COMMUNICATION

PART THREE

M. R. HASKARD,* VK5ZBH

(iii) PRACTICAL HINTS IN BUILDING A SYNCHRONOUS COMMUNICATION SYSTEM

A synchronous communication system was designed and constructed, operating on a frequency of 96 Mc. (see photograph). The receiver was direct conversion and had a pull in range of ± 850 cycles, while it would follow a signal drift of ± 2.1 kc./sec. The receiver would remain locked onto a signal until the noise or interference level had increased to a point where the noise power equalled the power in one sideband of the received signal.



96 Mc. Synchronous Communication System.
Top: D.s.b.s.c. Transmitter.
Bottom: D.s.b.s.c. Receiver.

The following are several suggestions which could be borne in mind by a person constructing a d.s.b.s.c. system.

* 3 Te Anau Ave., Prospect, South Aus.

(1) The Transmitter

This is relatively simple to design and construct. The only circuit which may be of interest is the clipping stage shown in Fig. 13.

An idea of the amount of audio power required to fully modulate a transmitter may be acquired from the example that 8 watts were required for a kilowatt transmitter.

Comments on the design of the audio system (its frequency response) and the final modulated amplifiers have been given in the previous sections.

(2) The Receiver

I would suggest that a direct conversion receiver should not be used for an all-band receiver. Not only is switching of coils necessary, but the 90° radio frequency phase shift network and perhaps the "slope" of the reactance tube would have to be changed. All this can be extremely difficult. A simple synchronous receiver on about 80 metres in conjunction with crystal controlled converters would be ideal.

In constructing the receiver, special care must be taken to ensure a good solid chassis and that all audio wiring is shielded. This is because a very large percentage of the receiver gain is at audio frequencies and hence audio feedback (electrical or mechanical) can easily occur.

The receiver must be designed from the outset as a servomechanism problem. This ensures correct tracking, stability and sensitivity. As in Fig. 6, each section should be considered as a black box, and when the overall servo loop has been solved, the black boxes should be filled in. The servo is of the first order type (this is why a frequency modulator is used rather than

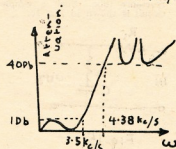
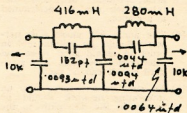
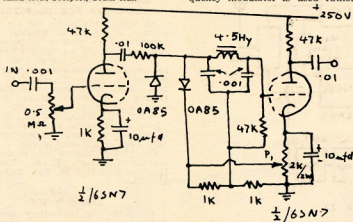


Fig. 14.

a phase modulator) and as such when the receiver is correctly "locked on" there will be zero error in phase (provided the phase is not changing linearly, i.e. no frequency shift).

Special points to note are:

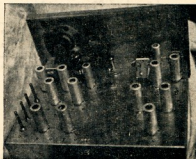
- (1) For low frequencies, the radio frequency 90° phase shift network can be a simple R/C type. For high frequencies, a $\frac{1}{4}$ wavelength of transmission line is suitable.
- (2) The audio amplifier in the I and Q channels should not pass any frequency below about 200 cycles, or heterodyne whistle will be troublesome.
- (3) The low pass filters determine the receiver selectivity curve, and, therefore, special attention should be paid to them. A suitable Tchebycheff circuit is shown in Fig. 14.
- (4) A.G.C. must be used on the audio system.



Note: - P_1 sets clipping Level.

Frequency response 200m → 2.5 kc/s.

Fig. 13.



A 96 Mc. D.s.b.s.c. Receiver (cover removed).

- (5) A small 1" oscilloscope is far superior to an S meter. If outputs from the I and Q amplifiers are fed onto the X and Y plates, not only can the signal strengths be determined, but the phase error, frequency drift and other information can be determined at a glance.
- (6) The audio 90° phase shift network should be within $\pm 5^\circ$ in order to obtain good noise and interference rejection. Any standard circuit can be used.
- (7) To stabilise the servo loop an integrating network should be placed in the d.c. path to the reactance tube. Such a simple circuit is shown in Fig. 15.

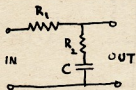


Fig. 15.

Block diagrams of a simple transmitter and receiver are given in Figs. 16 and 17.

Apart from solving the servo loop, a d.s.b.s.c. receiver working on 80 metres is not very difficult to design and construct. I feel that because of the distinct advantages offered by a d.s.b.s.c. system over a present-day a.m. communication system, when building their next transmitter and receiver, Amateurs should give a d.s.b.s.c. system consideration.

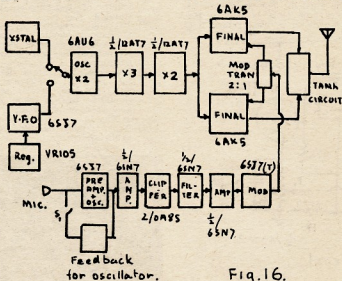
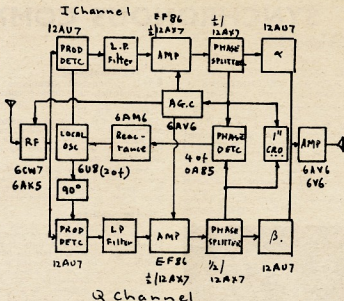


Fig. 16.

Block diagram for the 96 Mc/s Transmitter.



Block diagram for the 96 Mc/s Receiver

Fig. 17.

SELECTED BIBLIOGRAPHY

1. Proceedings of the I.R.E., Single Sideband Issue, Vol. 44, No. 12, Dec. 1956.
2. Proceedings of the I.R.E., Discussion on the Single Sideband Issue, Vol. 45, No. 4, p. 534-537, April 1957.
3. "Phase Shift Radio Teletype," J. P. Costas, Proc. I.R.E., Vol. 45, No. 1, January 1957.

4. John K. Webb: "A Detailed Description of the Synchronous Detector Process," Institute of Radio Engineers' Western Convention Record, Vol. 1, No. 3, 1957, Part 3, p. 29-31.
5. J. P. Costas and R. W. French: "Transmitter Circuits for Suppressed Carrier a.m.," "Electronics," Vol. 30, No. 12, p. 128-131, December 1957.
6. John K. Webb: "A Synchronous Detector Adaptor," "CQ," June 1957.

ELECTRONIC MAINTENANCE ENGINEER FOR HOSPITAL

An opportunity exists for the above position at the Alfred Hospital (Melbourne). The position is permanent and embraces the following subjects:

DC/AC amplifiers up to 1,000 cycles including band-pass filters; carrier wave equipment; power supplies (all fully regulated); galvanometers (light recording); P.E. cell work; pen writing gear; radio active counters, etc.

Salary: £1,200-£1,600 p.a., depending on qualifications, etc. Normal hours of business and most interesting work with very enthusiastic people.

For further information, contact the Admin. Secretary, W.I.A., Victorian Division, P.O. Box 36, East Melbourne, C.2, Vic.

TRADE NEWS

An Australian subsidiary company, Collins Radio Company (Australasia) Pty. Ltd., located at Stanhill, St. Kilda Road, Melbourne, Victoria, will serve Collins customers in the Australian, New Zealand and South East Asia area.

A spare parts service centre and complete test facilities employing factory trained technicians for Collins equipment will be maintained by the new company.

T.V.I. LITERATURE

JOHN ANDERSEN,* VK3ZFO

• The following is a bibliography relating to t.v.i./b.c.i. and is published to assist those who require additional information. The Publications Committee requests all Divisions to advise the problems which their Amateurs are facing in dealing with this matter.

PUBLIC RELATIONS AND CAUSES OF T.V.I.

T.v.i. Causes and Cures—Phil Rand. The A.R.R.L. Handbook—Section 23, p. 546, 1959 Ed.
V.h.f. Handbook, Orr and Johnson—pp. 75-89 (includes notes on neutralisation).
T.v.i. Diplomats—"QST" June '54.
U.h.f. Strip T.v.i.—"QST" March '54.
Channel Strip T.v.i.—"QST" Nov. '53.
Spurious Radiation Problems—"QST" Jan. '54.
U.h.f. Strip Problems—"QST" Dec. '54.
T.v.i. Causes—"QST" Sept. '52.
V.h.f. Heterodyne T.v.i.—"QST" June '52.
Harmonic Radiation from External Non Linear Sources—"QST" Jan. '53.

ANTENNA COUPLING

Standing Waves and T.v.i.—"QST" Jan. '54.
Home-Built Shielded Link—"QST" Aug. '52.
Stubs for T.v.i. Reduction—"QST" Aug. '52.
Curing T.v.i. with Co-axial Stubs—R.S.G.B. March '58.
Harmonic Reduction With Stubs—"QST" Dec. '48.
More on Signal Shifter T.v.i. Suppression—"QST" March '55.
By-passing for Harmonic Reduction—"QST" April '57.
T.v.i. Tips—"QST" Aug. '49.

LOW PASS FILTERS

Adjusting L.P.F.—"QST" Mar. '55.
Tin-Can Low Pass—"QST" Sept. '54.
Low Pass Filters from Standard mica Capacitors—"QST" Dec. '52.
Low Cost T.v.i. Filter—"QST" May '50.
Eliminating T.v.i. by Low Pass Filters—"QST" Feb. '49.

Half Wave Filters—"QST" Feb. '50.
High Attenuation Filter—"QST" Jan. '50.
Design of L.P.F.—"QST" Dec. '49, Jan. '50.
Half Wave Filter—"QST" Dec. '49.
High Pass Filters—"QST" Aug. '50, Oct. '50, May '49.

SHIELDING

Simple Experimental Shielding—"QST" Dec. '50.
Filtering and Shielding Tips—"QST" Oct. '53.
Shielding for T.v.i. Reduction—"QST" Oct. '50.

TEST DEVICES

Baking Can Wavemeter—"QST" Feb. '55.
Handy Handful (G.D.O.)—"QST" Mar. '53.
Increasing Sensitivity of G.D.O. Freq. Measurements—"QST" June '53.
Effective T.v.i. Probe—"QST" May '52.
Phase Angle Data for Transmission Lines—"QST" July '52.
U.h.f. Converter Harmonic Checker—"QST" July '51.
Harmonic Separators—"QST" Dec. '50.
Regenerative Wavemeter—"QST" Nov. '49.
Useful Tool for T.v.i. Reduction—"QST" July '49.
More on T.v.i. Elimination—"QST" Dec. '48.
All Band G.D.O.—R.S.G.B. Nov. '50.
Further Notes on T.v.i.—R.S.G.B. Oct. '50.
Design of Pi Network Tank Circuits—R.S.G.B. April '52.
An Improved Low Pass Filter—R.S.G.B. June '52.
Practical Applications of Pi Networks to T.v.i. Reduction—"QST" Jan. '52.
Sensitive Harmonic Indicators—R.S.G.B. Feb. '52.
Design of Low Pass Filters for T.v.i. Reduction—R.S.G.B. May '53.

T.V.I./B.C.I. Committees have been formed in all W.I.A. Divisions and any W.I.A. member experiencing t.v.i./b.c.i. is particularly requested to inform his local committee of his problems. The above bibliography has been based upon articles which the Amateur has ready access to, but it is not a complete survey. Your Divisional library may be able to lend you any of the above journals.

★
When purchasing any item advertised in "A.R." please state that you read the advertisement in "A.R."

BOOK REVIEWS

RADIO AMATEUR'S HANDBOOK 37th Edition, 1950

This year reviewing the annual edition of this publication was a pleasant rainy day occupation for me and overcame my disappointment at the rain ruining a perfectly good painting day.

It is rightly styled the "Standard Manual of Amateur Radio Communication" and over three million copies have been sold.

Its sections on the theory of radio communications have been revised to keep abreast of the state of the art, and material on the construction of equipment includes new designs in all categories. There are transmitters and receivers for every level of cost and constructional ability.

Special methods of Amateur communication, such as sideband and radioteletypes, are treated in sufficient detail so that any student of the art will be able to understand the basic principles. The theory and practice of Amateur mobile radio equipment is thoroughly covered and the use of transistors is included wherever applicable.

The chapter on vacuum-tube characteristics has been brought up to date, providing, as usual, one of the most complete listings of characteristics and base diagrams to be found between the covers of any one book.

I was a little disappointed to note that the only power supplies using silicon or germanium rectifiers were described on pages 494 and 495 where it is suggested that "silicon rectifiers may be used in lieu of the selenium types specified". The other reference is in section 6, pages 201 to 205, "A Compact 650 Watt Amplifier" where germanium rectifiers are used in a dual voltage doubling circuit.

Publisher: American Radio Relay League. Australian price 46/3, postage 3/-. Our copies from McGill's Newsagency, 183 Elizabeth Street, and Technical Book & Magazine Co. Pty. Ltd., 225-229 Swanston Street, Melbourne.

"THE TRANSISTOR" Theory and Applications

This is the latest from the Philips Technical Library. It is well written and describes transistors and transistor circuits in sufficient detail for Amateurs to duplicate the equipment described. Unfortunately it does not include data on Philips' v.h.f. transistor, the OC170.

Our copy from McGill's Australian Newsagency, 183 Elizabeth St., Melbourne, C.I.

"SHORT WAVE RECEIVERS FOR THE BEGINNER"

Many years ago when I was in my teens, I used to avidly search any literature which became available to me in search of circuits similar to those described in this publication and I can recommend this booklet to our younger constructors. It also contains information on setting up a receiving station, reporting, etc., and should be invaluable to the s.w.l.

The components used in the receivers are of British origin and identical units or acceptable substitutes should be readily available from your usual supplier.

Our copy from Data Publications Ltd., London. Data Book Series No. 14. Technical book suppliers should be able to supply.

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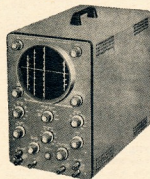
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HEATHKIT SG-8
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HEATHKIT O-12 5-inch OSCILLOSCOPE
VERTICAL CHANNEL



Sensitivity: 0.025 volts (R.M.S.) per inch at 1 Kc.
Frequency Response: Flat within plus or minus 1 db. from 8 c.p.s. to 2.5 Mc. Flat plus 1.5 to minus 5 db. from 3 c.p.s. to 5 Mc. Response at 3.58 Mc., minus 2.2 db. (All response measurements referred to 1 Kc.)
Rise Time: 0.06 microseconds or less.
Overshoot: 10% or less.

HORIZONTAL CHANNEL

Sensitivity: 0.3 volts (R.M.S.) per inch at 1 Kc.
Frequency Response: Flat within plus or minus 1 db. 1 c.p.s. to 300 Kc. Flat within plus or minus 3 db. 1 c.p.s. to 400 Kc.
Attenuator: Low impedance type in cathode follower output.
Input Characteristics: Selector switch permits use of external input through panel terminal, line-frequency sweep of variable phase or internal sweep from sweep generator.

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Specifications: D.C. Volts: 7 ranges 0-1.5 to 0-1,500. Input Resistance: 11 megohms. Sensitivity: 7,333,333 ohms per volt on 1.5v. range. Accuracy plus or minus 3% full scale.

A.C. Volts: 7 R.M.S. ranges 0-1.5 to 0-1,500. Frequency response (5v. range): Plus or minus 1 db., 42 c.p.s. to 7.2 Mc. Accuracy plus or minus 5% full scale. Seven peak-to-peak ranges 0-4 to 0-4,000.

Resistance: Seven ranges measures 0.1 ohms to 1,000 megohms with internal battery.

Size: 7 1/2 x 4-11/16 x 4 1/4 inches.



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Remembrance Day Contest, 1960

A HANDSOME perpetual trophy is awarded annually for competition between States, inscribed with the names of those who made the supreme sacrifice, and so perpetuating their memory throughout Amateur Radio in Australia.

The name of the winning Division each year is also inscribed on the trophy. In addition, the winning Division will receive a suitably inscribed framed photograph of the trophy.

Objects

Amateurs in each Call Area (this includes those in Australian Mandated Territories and Australian Antarctica) will endeavour to contact Amateurs in all other Call Areas (VK1 and VK2 are considered to be one Call Area).

Date of Contest

13th and 14th August, 1960.

Duration

From 1800 hours E.A.S.T., 13th August, 1960, to 1759 hours E.A.S.T. on 14th August, 1960. A period of 15 minutes silence will be observed by all stations on the 13th August immediately prior to the start of the Contest when an appropriate broadcast will be made from VK3WIA and relayed by the Divisional Stations.

RULES

1. There shall be four sections to the Contest:

- Transmitting Phone.
- Transmitting CW.
- Transmitting Open.
- Receiving Open.

2. All Australian Amateurs may enter the Contest whether their stations are fixed, portable or mobile, but only members of the W.I.A. are eligible for the Awards. Portable/mobile operation is defined as transmitting and/or receiving equipment which is not connected to any private or public power mains or plant.

3. All Amateur frequency bands may be used, but no cross-band operation is permitted.

4. Amateurs may operate on both phone and c.w. during the Contest (e.g. phone to phone, c.w. to c.w., or phone to c.w. and vice versa), but may submit an entry for only one of the above sections listed in Rule 1.

An Open log will be one in which points are claimed for both phone and c.w. transmissions.

A contestant transmitting on phone but receiving on c.w. must enter for the phone section (and vice versa). Refer to Rule 11 concerning entry in logs.

• The Federal Contest Committee of the Wireless Institute of Australia wishes all Australian Amateurs and Short Wave Listeners to participate in the Annual Contest which is held to perpetuate the memory of those Australian Amateurs who gave their lives for their country during World War II. It is held on the week-end nearest to 15th August, the date on which hostilities ceased in the S.W.P.A.

5. Only one contact per station per band is allowed and arranging schedules for contacts on other bands is not permitted.

6. Only one licensed Amateur is permitted to operate any one station under the owner's call sign. Should two or more operate any particular station, each will be considered a contestant and must submit a separate log under his own call sign.

Contestants operating stations other than their own shall be referred to, for the purpose of these rules, as "substitute operators". Their operating procedure will be as follows:

Phone contacts: Substitute operators will call "CQ Remembrance Day" followed by the call sign of the station they are operating and the word "log" followed by their own call sign.

C.w. contacts: Substitute operators will call "CQ RD de" followed by the group call sign comprising the call sign of the station they are operating, an oblique stroke, and their own call sign.

Contestants receiving signals from a substitute operator will qualify for points by recording the call sign of the substitute operator only.

7. Entrants must operate within the terms of their licences.

8. **Cyphers:** Before points may be claimed for a contact, serial numbers must be exchanged and acknowledged. The serial number of five or six figures will be made up of the RS (telemetry) or RST (c.w.) reports plus three figures which may begin with any number between, or including, 001 and 100 for the first contact and which will increase in value by one for each successive contact, e.g. if the number chosen for the first contact is 053, then for the second contact the number must be 054, for the third 055 and so on. If any contestant reaches 999, he will start again with 001.

9. Entries must be set out as shown in the example, using only one side of the paper. Entries must be postmarked

not later than 4th September, 1960, and addressed to the Federal Contest Committee, W.I.A., Box 851J, G.P.O., Hobart, Tasmania.

10. Scoring will be based on the table shown:

SCORING TABLE

		To									
From											
		VK0	VK1-2	VK3	VK4	VK5	VK6	VK7	VK8	VK9	
VK0	1	6	6	6	6	6	6	6	6	6	
VK1-2	6	1	2	3	5	4	6				
VK3	6	1	3	2	5	4	6				
VK4	6	1	2	3	5	4	6				
VK5	6	2	1	3	5	4	6				
VK6	6	1	2	4	3	5	6				
VK7	6	2	1	4	3	5	6				
VK8	6	1	2	3	4	5	6				

Note.—Read table from left to right for points for the various call areas.

In addition a bonus of 25 points may be claimed for the first contact in each Call Area on 50 Mc. or above.

11. **Logs:** All logs shall be set out as in the example shown and in addition will carry a front sheet showing the following information:

Name.....Section.....

Address.....Call Sign.....

Claimed Score.....

Declaration: I hereby certify that I have operated in accordance with the rules and spirit of the Contest.

Signed.....

Date.....

All contacts made during the Contest must be shown in the log submitted (see Rule 4).

Entrants in the open section must show phone and c.w. contacts in one numerical sequence.

12. The right is reserved to disqualify any entrant who, during the Contest, has not observed the regulations or who has consistently departed from the accepted code of operating ethics.

13. The ruling of the Federal Contest Committee of the W.I.A. will be final. No dispute will be entered into.

14. **Awards:** Certificates will be awarded to the winners of the phone, c.w., open and receiving sections in each area (Northern Territory will count as a separate Call Area). There will be no outright winner for Australia. Further Certificates may be awarded at the discretion of the Contest Committee.

The State to which the Perpetual Trophy will be awarded shall be determined in the following way:

(Continued on Page 15)

EXAMPLE OF TRANSMITTING LOG

Date/Time E.A.S.T.	Band	Emission	Call Sign	RST/NR. Sent	RST/NR. Rcvd.	V.h.f. Bonus	Points Claim.	Blank
Aug. '60								
13 1802	7 Mc.		VK5XU	59001	VK3XU	—	2	
13 1905	"		VK6RU	56004	VK9DB	—	5	
14 1115	50 "		VK4RZ	47135	VK5QR	25	3	

Note.—Standard W.I.A. Log Sheets can be used to follow the above form.

EXAMPLE OF RECEIVING LOG—VICTORIAN S.W.L.

Date/Time E.A.S.T.	Band	Call Sign Heard	RST/NR. Sent	Station Called	V.h.f. Bonus	Points Claim.	Blank
Aug. '60							
13 1802	7 Mc.	VK5XU	59001	VK3XU	—	2	
13 1905	"	VK6RU	56004	VK9DB	—	5	
14 1115	50 "	VK4RZ	47135	VK5QR	25	3	

Note.—Standard W.I.A. Log Sheets can be used to follow the above form.

AMATEUR CALL SIGNS FOR MONTH OF FEBRUARY, 1960

NEW CALL SIGNS

VK— New South Wales
2CK—G. A. Warner, O.T.C. Bringly.
2CO—C. H. Orr, 24 Noble St., Hurstville.
2CB—D. F. Lloyd, 20 E. Bringly.
2CV—R. B. Chorley, 136 Atchinson St., Crows Nest.
2HR—M. W. Beck, O.T.C. Bringly.
2PK—H. T. J. Stone, O.T.C. Bringly.
2DS—S. E. Handcock, 16 Tedman Pde., Silvan.
2ZPC—F. J. Carter, 12 Watts St., Ryde.

Victoria
3EL—D. F. Reid, 355 O'Hara Rd., Pascoe Vale.
3LL—K. V. Braysshaw, 99 Broughton Rd., Mt. Waverley.
3AFQ—H. L. Hepburn, 601 Nepean Highway, East Brighton.
3AMH—W. E. Sadler, Station: Walker St., Ballarat; Postal: 208 Eyre St., Ballarat.
3ARZ—W. E. Roper, Lot 59 Orchard St., Mt. Waverley.
3ZAZ—R. N. Magg, C/o. Radio Australia, Shepparton.
3CA—R. G. Abbey, 207 South Rd., Brighton.
3ZCQ—R. A. Thatcher, "No-Ray-AI," 55 Sandhill Rd., Tecoma.
3ZIR—I. A. Bourke, 2 Crowther Place, Brighton.
3ZJH—D. W. Dorsey, Cottage No. 6, Radio Australia, Shepparton.
3ZJJ—D. C. Smith, 12 Inkerman St., Maidstone.

Queensland
4ZDM—D. W. McGrath, Station: 26 Latchford St., Pimlico, Townsville; Postal: C/o. P.O. Box 205, Townsville.

New South Wales
5TA—G. Cole, 8 Farrell St., Glenelg.
5ZAY—G. P. Yelland, 18 Lynington St., Tumbar.
5ZDK—R. R. Lamcraft, 38 Avenue Rd., Highgate.
5ZFK—F. A. Foale, Hillside Rd., Springfield.

Western Australia
6AO—A. R. Jarman, Forrest, W.A.
6IR—J. R. Wood, 1031 Wellington St., Perth.
6MW—M. P. Webster, 139 Wellington St., Mosman Park.
6TC—C. T. Power, Lot 42, George Rd., Geraldton.
6ZCH—F. J. McMullen, Albany Highway, Madingley.

Tasmania
7ZRJ—R. H. Waldon, 11 Mayne St., Invermay, Launceston.

Territories
9HC—H. J. Collister, Cable Station, Cocos Iald.

CHANGES OF ADDRESS

New South Wales
2YJC—W. Johnson, 30 Hicks St., Merewether.
2AAU—K. P. A. Persson, 96a Station St., Arncliffe.
2ABM—R. G. Morgan, 98 Northcote Rd., Bankstown.
2AEF—A. G. Oswald, 39 Allawah Ave., Cars Park.
2AEV—A. McMurray, 241 North Rocks Rd., North Rocks.
2AFD—D. J. Fisher, Kapooka Ave., Dapto.
2AGP—E. A. Parker, 79 Perouse Rd., Randwick.
2AIC—C. Allen, Eastern Command Signals, Gormley St., Lidcombe.
2AIP—J. P. Franklin, 30 Fitzroy St., Umina.
2AIIW—H. J. Weatherly, Lot 4, Villiers Rd., Padstow Heights.
2AVJ/T—W. B. Jones, 231 Albany St., Gosford.
2AVK—S. F. G. Williams, 147 Katoomba St., Katoomba.
2AWW—G. D. Wheaton, 35 Sixth Ave., Condel Park.
2ZGR—G. Romyne, 117 Ryde Rd., Hunters Hill.
2ZJN—R. J. Neurath, 51 Doyle St., Revesby.

Victoria
3JT—J. L. G. Symons, 60 Maple St., Mt. Waverley.
3OK—J. Cready, 22 Lyell St., South Melbourne.
3PV—D. B. Shaw, Station: 29 Narong Rd., Caulfield North; Postal: C/o. O.T.C. Receiving Station, Rockbank.
3QC—C. Blake, 39 Urrught St., Horsham.
3VS—I. L. Griffin, 27 Auburn Rd., Auburn.
3AER—A. Parker, 30 Gillies St., Fairfield.
3AKA—K. H. Hughes, Sunhill Rd., Mt. Waverley.
3APV—D. B. Shaw, C/o. O.T.C. Receiving Station, Rockbank.
3ZJE—J. R. Edwards, 52 Orrong Rd., Elsternwick.

Queensland
4CI—C. E. Cogswell, 38 Bernhard St., Paddington, Brisbane.
4JA—J. T. Marston, 187 Aberdeen Pde., Boodall.
4XS—L. J. Salter, 66 Haly St., Kingaroy.

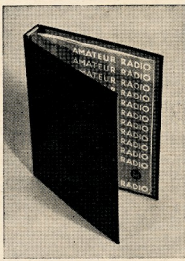
South Australia
5DJ—J. F. Drew, Kingston, S.E.
5FE—P. Ward, P.M.G. 5/Tech. Res., Marree.
5FA—A. R. Allwright, 2 Shaxton St., Salisbury North.
5IW—I. B. Wall, 8 Dutton St., Glen Osmond.
5PK—P. T. Hainsworth, Manunda Ave., Windsor Gardens.
5RZ—O. L. Nestrom, 7 Daphne St., Kurrala Park.

Western Australia
6ZCE—K. J. Kosina, 4 Walker St., Wembley.

Tasmania
7JO—J. G. Oliver, 83 Montagu St., Newtown.

CANCELLED CALL SIGNS

VK— New South Wales
2DS—A. D. Freeman.
2EM—A. F. Sutton.
2AAZ—18th L.A.A. Regt. Radio Club.
2ACO—C. H. Orr (now VK3CO).
2AHL—W. A. Lewis.
2AHW—H. T. J. Stone (now VK2PK).
2ANY—M. W. Beck (now VK2HR).



2AQO—D. F. Lloyd (now VK2CR).
2AVG—G. Y. Gabriel.
2AVO—J. T. Crichton.
2AVW—G. A. Warner (now VK2CK).
2AXD—E. Carruthers.
2AXS—R. R. Smith.
2AYE—D. E. Evans.

Victoria
3WT—W. G. Barratt.
3AJX—A. R. Jarman (now VK6AO).
3AYO—M. T. Webster (now VK6MW).

Queensland
4DS—D. R. Sneedon, Willis Island.

South Australia
5CR—W. F. Couper.
5DG—D. P. Gyles.
5LW—R. D. Kelly.
5ZEF—I. B. Fraser.

Western Australia
6DL—D. Laws.

Tasmania
7PD—P. E. L. Dunne.

PERMITS GRANTED FOR TELEVISION EXPERIMENTS

VK—
2AJI/T—F. G. Clissold, Box 230, Denilquin.
2ZEF/T—R. J. Flynn, Experiment Farm, Yanco.
4VB/T—J. P. Wood, 175 Ferguson Rd., Seven Hills.
6ZBK/T—L. G. Rock, 36 Essex St., Wembley.

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VK5DF AT FAIR

Amateur Radio Station VK5DF was set up at the Port Lincoln Trades and Industries Fair, held on 25th and 26th March, 1960.

John VK5JM and Wally VK5DF were the operators on the 7 and 14 Mc. bands. The photograph shows Wally VK5DF at the controls.

Radio conditions were not the best during the hours of operating, but 30 most interesting contacts were made and greatly appreciated by the patrons to the Fair. Quite a few took the opportunity of having a few words to say to fellow Amateurs, both near and distant. The best DX was to ZL land.

The transmitter was a Geloso v.f.o. into a single 807 at 50 watts plate and screen modulated. The receiver was home built, 10 tubes, one r.f. stage, three i.f. stages at 455 Kc., and plug-in coils for the various bands.

The complete rig was set up in a home-built walnut veneer cabinet and has the permission of 5DF's XYL to allow it set up in the front room of the house.



The antenna used at the Fair was 68 feet long, 25 feet high, and end fed with 300 ohm ribbon 45 feet long.

The DX cards pinned around the world map were loaned by Tubby VK5NO, and came from 70 different countries. John VK5JM loaned a spare receiver and the globe of the world.

The Port Lincoln Junior Chamber of Commerce is grateful to the P.M.G. Radio Branch for the special permission to operate the station at the Trades and Industries Fair as a working station, and sincere thanks to the Amateurs who made contact. By the time that this is read it is hoped that the special QSL cards printed for the occasion will have been posted out to all those stations that made contacts.

ROSS HULL MEMORIAL V.H.F. CONTEST 1959-60 RESULTS

TROPHY WINNER

D. R. Horgan, VK4ZAX, was the trophy winner and highest scorer with 1,885 points.

AWARD WINNERS

Phone:	
VK2ABR—A. W. Rushby	707
VK3ZFM—R. A. H. Blake	628
VK4AX—D. R. Horgan	1885
VK5ZGA—G. A. Gormly	1052
VK6WG—W. W. Green	505
VK7ZAI—D. A. H. Thorne	307
VK1BWD—Takashi Miyazaki	474
JA2ZL—Yasuni Yamada	142
JA3ASP—Shuichi Matsumoto	101
JA8CC—Ken-ichi Kitajima	227
Open:	
VK2WH—W. H. R. Stitt	951
VK4PU—J. D. Purdon	691
VK6BE—J. R. Elms	804
VK7LZ—C. P. Wright	764
VK9XK—S. R. Coleston	593
ZL2DS—K. R. Kirkcaldie	205
Receiving:	
D. King (VK4)	1672
K. A. Wehr (VK5)	1204
J. M. Hilliard (VK3)	481
Jasutsugu Miura (JA)	415

INDIVIDUAL SCORES

Phone:			
VK2ABR	707	VK5ZDR	654
VK2HE	650	VK5ZBL	653
VK2RX	553	VK6WG	505
VK2ZER	542	VK6ZBP	490
VK2ZCF	341	VK6ZBZ	446
VK2ZDM	237	VK6FM	293
VK2ZAD	125	VK6ZCD	267
VK3ZFM	628	VK7ZAI	307
VK3ZCG	574	VK7ZAO	198
VK3ZCZ	441	VK7ZAK	136
VK3ZFO	294	VK7ZAA	76
VK3ZGP	252	VK7ZAK	47
VK3ZAT	240	JA1BWD	474
VK3ZBR	142	JA1CYC	396
VK3QV	100	JA1AD	329
VK3ZCO	84	JA1CYZ	266
VK4ZAX	1885	JA1BIR	211
VK4NG	1011	JA1BYM	168
VK4ZBE	889	JA1CWP	139
VK4ZBI	506	JA1CBZ	95
VK4RW	302	JA2ZL	142
VK5ZGA	1052	JA3ASP	101
VK5ZBZ	802	JA8CC	227
VK5KK	772		

VK5ZBH sent in a check log.

Open:

Participants as shown in Open Awards.

Receiving:

Participants as shown in Receiving Awards plus C. H. Thorpe (VK4) 422 points.

AUSTRALIAN AMATEUR CALL BOOK

The 1960-61 Edition will be issued during June-July and orders will be accepted in advance. Check your Call Sign listing and advise the Publications Committee of any correction required. Use the tear-sheet at the back of the Call Book.

FEEDBACK

The extraordinary meeting of Federal Council concluded at 6.30 p.m. on 16th April, 1960, having spent all day discussing the implication of I.T.U. with reference to VK Amateurs. The results of this meeting will have a far reaching effect, and only history will prove if the correct approach was adopted.

Like yourself, I had little knowledge of how Federal Council and Federal Executive functioned, but having spent the day at this meeting, have now gained some impressions which may interest you.

Federal Council is no social gathering, neither is it a group of yes men. Each Councillor had his say and forthrightly put forward the views of his Division. If these views were not adopted it only indicated that the majority of Councillors did not concur.

This meeting, specially called to discuss frequency allocations, did just that. They fully discussed every Amateur Band and you may be assured that your favourite band was the subject of as much debate as any other band. No bias was shown and the Councillors proved that they did have your interests in mind.

You may not have yet heard that Federal Council agreed to Federal Executive taking the strongest possible action to retain the maximum Amateur frequency allocation. Many other details were agreed upon, and you should be fully informed. If you do not know the full details, ask questions of your Federal Councillor, Division, or on the W.I.A. call-back.

Radio Amateurs are indeed fortunate that they have access to a rapid communication medium—Amateur Radio. Let us use this to the fullest extent so that every Australian Amateur is aware of the outcome of the Extraordinary Federal Council Meeting.

Rumour has no part in our activities, particularly as the true facts are so readily available. Therefore base your comments upon official facts and ignore grapevine reports.

Back your Division, which has agreed to a standard Australian Amateur policy regarding retention of our Amateur bands. Act as a united W.I.A. to retain frequency allocations because as an individual you will only help to weaken Federal policy.

Every Australian Amateur is to receive a copy of the full I.T.U. report regarding frequency allocations. This will be the same report as that tabled at the Federal meeting, so you, too, will then possess all the relevant facts.

★
Heard an interesting character calling CQ ninety-three times without giving his call sign. Bet he complained that no one ever answers him. What's the matter OM? Even pirates give call signs.

★
That character must read this column. He now heterodynes VK3WI.

★
Read that Mt. Bunninyong may be used for erection of t.v. towers. My, that will ruin the DX won't it.

73,
CASEY.

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" 66 MA	£11/3/6
" 66 MD	£9/3/0
" 67 MA	£11/3/6
" 67 MD	£9/3/0

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Secondary: 1,000, 850, 750, 600, 500 volts
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filter.

TYPE PT1870

Primary: 230 or 240 volts to high, medium,
or low taps. (Overwound primary.)
Suitable for switching with non-shorting
contacts.

Secondary 1: 850, 750 or 600 volts per side
of c.t., depending on primary tap se-
lected. D.C. load current 200 mA. con-
tinuous or 250 mA. part intermittent
with choke input filter.

Secondary 2: 4.5 to 6 volts at 0.3 amp. for
pilot lamp. For use with 3R4GY recti-
fier. choke input filter.

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Primary: 200, 220, 230, 240 volts.
Secondary: 565, 500, 425 volts per side of
c.t., 250 mA. condenser input filter.
Filaments: 2 x 6.3v. (3a.), 2 x 2.5v. (3a.),
5v. (3a.). Horizontal mounting.

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Primary: 200, 220, 230, 240 volts.
Secondary: 2.5v. c.t. 10a. for 2 x 806/A fil.
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CORRESPONDENCE

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

JOHN MOYLE MEMORIAL STATION

Editor "A.R.", Dear Sir,

Suggestions have been requested for the future of those who do not know John personally to perpetuate the memory and work of the late John Moyle.

Able penceytrists have made it possible for many who do not know John personally to preserve the memory and work of the late John Moyle. His efforts on behalf of the Wireless Institute of Australia are known to all members and it appears to be generally agreed that the W.I.A. should claim the privilege of sponsoring a memorial.

When the final form is decided, it should preserve the dignity of the man remembered and to achieve this, it is considered all contests should be avoided.

To endow a scholarship in radio engineering would be a fine and lasting tribute if it could be financed, but the best memorial to John would be to perpetuate something which he created and through which he was known to Amateurs all over the world.

It would be a nice gesture to approach Mr. Moyle to see if he agrees to the station to obtain permission to control and operate VK2JU as the "John Moyle Memorial Station". The New South Wales Division is admirably situated to obtain permission to control and operate VK2JU as the "John Moyle Memorial Station".

What better way to perpetuate the memory of a great Amateur?

—George Bills-Thompson, VK3AHH.

THE AMATEUR'S STRUGGLE

Editor "A.R.", Dear Sir,

Recent statements in Parliament, touching on the Amateur's struggle to defend his right to use the existing bands, must cause all of us to do some deep thinking on this urgent matter.

When Mr. Daly, M.H.R. (16/3/60), in the House challenged the P.M.G. (Mr. Davidson) to give answers to the questions "Who were the delegates to the (Geneva) Conference? What instructions were given to them? Did they act contrary to those instructions?" and the question "Who were the delegates to the (Geneva) Conference? What instructions were given to them? Did they act contrary to those instructions?" Mr. Davidson was unable to give an answer to all! He obviously intends to hide the glaring and disturbing fact that in spite of the widespread support of Allan Fairhall's statements in the House in May last year (in the bands), yet our delegates urged acts of defiance and almost certainly these will be recommended in the forthcoming Report to the House.

To quote Mr. Bryant (Wills) (Hansard, page 318), "This Government's indirect direction of Public Servants to act on behalf of the Nation has got to cease".

As far as Mr. Bryant must know, this has been evident for a long time now. Parliament is a yoke so long as it continues.

It is not enough in my opinion that the Federal Government advocates the slogan "Use the bands or lose them". We can and must bring political pressure to bear individually and as an organisation.

If we once assume that the Amateur represents the people, then we must be virtuous of that assume that just like everyone else he has lost much of his leisure time over the last 10 years or more through the agency of inflation, and the high cost of living and the necessity to work overtime, etc. In other words he is fighting on at least two fronts—just grade—to keep his money and yet still retain some leisure time for his hobby.

What one could suggest is a campaign to induce each Amateur to spend a small part of his leisure time to write to his local Member and the local paper, supporting Allan Fairhall's more recent move in the House (The "Herald" 9/6/60) to set up a separate body to allocate the bands, apart from other government departments who use radio bands, on similar lines to the B.S.A.

This could be an excellent beginning.

—V.H. Richardson, VK3XQ.

CUTS IN AMATEUR BANDS

Editor "A.R.", Dear Sir,

No doubt when this letter appears the members will have read in your magazine the recent speeches in the Federal Parliament of Ministers of State, Mr. E. H. H. Wicks, Mr. Turner and Dean referring to prospective cuts in Amateur bands.

Mr. Fairhall has outlined the matter perfectly. The idea that such an important matter should not be brought before our elected representatives is quite wrong. The right to bring grievances before his Member of Parliament is the right of every citizen.

As mentioned in the Editorial column in "QST" for March, it appears from the proceedings at Geneva that in certain countries, Amateurs had no right to be heard. The moral of this is clear. From this time forward, in order to do our homework, we have to have good publicity and public relations. Let us constantly keep in touch through the daily press and our local Members. We tend to forget that a Commonwealth Department Minister had to be elected to the House and Parliament is elected by us, the citizens.

—R. L. Douglas, VK3ON.
M. E. Colett, VK2RU.
B. Brook, VK3AI.

"PINK PAGES"

Editor "A.R.", Dear Sir,

It is always regrettable when the correspondence columns of a specialist journal are used to expound views on matters in no way connected with its specialty.

In particular I refer to the querulous letter from Mr. J. G. Reed, VK2JR (hereafter referred to as Reed) in defence to his objection to the use of the courtesy prefix of address to all titles, etc.) in which he uses his pink pages suggestion as a vehicle for a mixture of bombast and abuse.

Let us examine his presumptions and suggestions.

Of what value would a list of names and hobbies be to anyone? It would include such as religious denomination, club membership, masonic affiliations, etc., for many of them are more important than particular hobbies. First names, really assume real value when several contacts have established a bond between operators. The traditional "Old Man" is far more suited to chance contacts than the rigmarole name here is Cecil—or Cedric—or Joe.

Does the Amateur need to hunt for kindred spirits and hobbies before he answers a call, or worse still, before he contacts another Amateur a second time? How many of the "active" Amateurs, as Reed calls them, would actually put a person up in the Call Book during contact?

Then again, what constitutes an active Amateur: one who commences every contact with the rigmarole, or one who is an active experimenter—and not a drone—requires us to bandy clichés with the mental constipation and verbal diarrhoea of him, I shall be content to remain a drone.

The Amateur licence permits us to carry out electronic and associate experiments—not social experiments!

Whilst not all medical practitioners may be regarded as God's gift to mankind, it would be as disconcerting to deny them the use of the title Doctor as it would to deny Reed the right to call himself Mister, if he chose, for one is no more regular than the other.

In contrast, however, the title "The Reverend" is reserved for regular when applied to "Clerics in Holy Orders" and as such is used in all official documents. To describe this title as a sanctimonious tag is surely in keeping with the spirit of the correspondence column in the book under arm episode. Fortunately, most school "professors" don't carry their precocity into adulthood.

Such a slight on the eleven clergy listed in the Call Book calls for an immediate apology which I and others hope to see in the next issue of "Amateur Radio".

—George Cameron—VK5EC.

Editor "A.R.", Dear Sir,

An excellent suggestion by "Professor" Joe Reed to list the activities of Amateurs in a pink page section.

This would assist in opening up new avenues of conversation during the QSO—with apologies to those technicians who have ever have us limit remarks to the subject of radio.

Joe's ideas did not call for the tirade of abuse that some members of the medical profession and its supporters.

Like the "Professor," I fail to see what useful purpose is served by the inclusion of a prefix to denote the calling or profession of an Amateur.

If it is not to drum up a little extra local business, then it surely must be social snobbery.

Which gentlemanly Amateur ever had the owner of the honey blonde tones at the other end of the QSO is married or not—plain "Marry" would do just as with Tom, Dick or Harry.

"M.D." states that our American brothers would class "Professor" Joe Reed as a peddler

of quack medicines. Might I point out to "M.D." that the prefix Dr. would mean to a backbone doctor, or as "M.D." himself prescribes—a pink pill doctor.

Second, "The Chairman" is wrong when he states that the vocation of a minister of religion is not a profession as according to social snobbery the three top professions emulated by the law, the Army, and the Clergy, in that order.

—J. F. Pickles, VK4FF.

The Publications Committee considers the suggestion regarding a pink page section in the Call Book has not met with favour and therefore closes correspondence on this subject.)

Editor "A.R.", Dear Sir,

Permit me space to reply to the various critics following publication of my letter proposing a special section of the Call Book. . . Personally, I do not expect that Amateurs will bestir themselves to make an equivalent of the pink pages possible for the Amateur Call Book. The experimental urge and the spirit of originality seems to have withered beyond recognition. . .

—J. G. Reed, VK2JR.

THIRD PARTY TRAFFIC AND EMERGENCIES

Editor "A.R.", Dear Sir,

One of the points most frequently brought up by the Amateur Radio community is the fact that Amateurs can be useful in providing communications in emergencies. The validity of this is one of our very month in "QST" columns. With the A.R.C.C.

If the P.M.G. Department recognises this as one of the reasons for our continued existence, it is a pity that the Amateur community given more opportunity to become proficient in message handling. I refer, of course, to third party traffic.

If a group of Amateurs, few or none of whom have ever had the opportunity of handling messages in an organised net, were suddenly to find that they are the only means of communication in a city, and the confusion and the result would probably be a shambles, or at best a most inefficient system.

If, on the other hand, the Amateurs had been, over a period of time, to develop a smoothly operating system of nets and traffic routing, the result would be much more beneficial to the public and much less confusing to the Amateurs concerned.

The National Traffic System, which operates throughout the U.S.A. and Canada, is a good example of what can be done by Amateurs.

Most nets in the system meet at least five times a week; some meet twice each evening, and a large amount of traffic is handled for Amateurs and for the general public. The result is considerable favourable publicity for the Amateurs, who in turn become proficient in emergency traffic handling.

I realise that the W.I.C.E.N. organises practices for its members, but this is not enough to develop a good system.

First, nets should meet at least five times a week, and should be integrated into a traffic system covering the whole country.

Second, I wish the only method for handling traffic but that is under story!

The P.M.G. Department has, I believe, a monopoly on communications in this country.

Surely it is not enough to say that they do not grant us third party traffic privileges? Surely it cannot be that they are afraid of the competition we would give them, because:

- (a) The total number of messages handled by Amateurs would be negligible part of those handled by the Post Office.
- (b) We would be operating a purely voluntary system, without charge, and therefore give no definite guarantee of delivery.
- (c) The P.M.G. could restrict our traffic (as does the C.I.C.) to messages of a non-commercial nature.

The extremely small loss in Post Office revenue due to some messages being handled by Amateurs instead of telephone or mail would be more than offset by the value, in times of emergency, of the communications system that we could build up.

Can we have any opinions on this, other than those of the ex-VET who misses his nightly sessions on the B.C. Emergency, Seventh Regional, and Pacific Area nets?

—Ben Pooley, VK5BP.

T.V.I. AND THE G.D.O.

Editor "A.R.", Dear Sir,

I wish to thank you for the inclusion in May 1960 of the T.V.I. and the G.D.O. to the author of same whom I believe supplied the original article from R.S.G.B. t.v.i.

(Continued on Page 15)

OVERSEAS TRIBUTES TO LATE JOHN MOYLE

The following tributes to the late John Moyle, VK2JU, have been received by the W.I.A. Federal Executive from overseas Amateurs:

Dear Mr. President,

It was with profound regret that I heard the sad news of the passing of John Moyle, VK2JU. I was on the British Delegation in Geneva and got to know John extremely well. He really did a first class job in Geneva and I would like very much to let you know how good an advocate you sent. Without doubt he furthered the Amateur cause. He did not spare himself, was well informed, and made his presence felt with tact, but none-the-less with firmness. Australian Amateurs, and indeed, all Amateurs are indebted to him. To hear of his death you can well understand was quite a shock. I feel we have all lost a sincere friend in Amateur Radio.

I trust you will accept this little note as an appreciation of John and his work.

L. E. Newnham, G6NZ,
President, 1953, R.S.G.B.

Dear Fellow Amateurs,

Through J. Claricots, G8CL, I have just learnt that our good friend, John Moyle, VK2JU, died last month.

I had the good luck to meet him at Geneva and to witness the splendid way in which he assisted the cause of Amateur Radio. His death is certainly a great loss to the fraternity and have been extremely sorry to hear about it. Please be so kind as to pass my condolences to the relatives of the deceased.

—Ottfried Lührz, ex-DL1KV,
Member I.A.R.U. Delegation.

Dear OM,

It is with great regret that I have to acknowledge receipt of your letter of 15th March, 1960,

R.D. CONTEST, 1960, RULES

(Continued from Page 9)

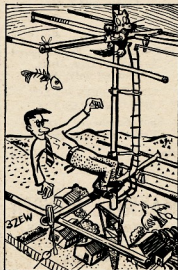
To the average of the top six logs should be added a bonus arrived at by adding to this average, the ratio of logs entered to the State Licensees, multiplied by the total points from all entries.

Example:

Average of the top six logs +

$$\left(\frac{\text{Logs Entered}}{\text{State Licensees}} \times \frac{\text{Total of Points}}{\text{Total of Entrants}} \right)$$

 Acceptable logs shall show at least five valid contacts.



"The Amateur is Balanced."

reporting the sad news of the death of John Moyle, VK2JU, and the sympathy of the members of our Society in this great loss is extended both to the W.I.A. and through you to his family.

My own personal sympathy is tinged with the great regret that I failed by a few short hours to meet John in Switzerland last year whilst on holidays.

Many thanks to you and to all your officers for the excellent performance in maintaining, if not status quo, then as near to it as could possibly have been achieved in the recent I.T.U. Conference regarding Region III.

—G. A. Cuppleditch,
President, Hong Kong Amateur Radio
Transmitting Society.

MRS. MOYLE'S SINCERE THANKS

The Federal President (Mr. Hull) of the Wireless Institute of Australia received the following letter from Mrs. Moyle:

Dear Mr. Hull,

Would you kindly convey to the Federal Executive and the Federal Council of the Institute my sincere thanks for kind messages and expressions of sympathy in our recent bereavement.

In this time of sadness it has given me much comfort to know of the high esteem in which John's contributions to the W.I.A. are held for, as you must well know, the Amateur cause was always very close to his heart.

(Signed) Alice Moyle.

The trophy shall be forwarded to the winning State in its container and will be held by that State for a period of 12 months.

RECEIVING SECTION

1. The receiving section is open to all short wave listeners in Australia, but no transmitting station may enter.

2. Contest times and logging of stations on each band are as for transmitting.

3. All logs shall be set out as shown in the example. Logs must show first the call sign of the station heard (not the station being worked), the serial number sent by it and then the call sign of the station being worked. The scoring table to be used is the same as that used for transmitting and points must be claimed on the basis of the State in which the receiving station is located. A sample log is given to clarify the position. It is not sufficient to log a station calling CQ, nor is it permissible to log a station in the same Call Area as the receiving station.

4. A station heard may be logged only once for each band.

5. Club receiving stations may enter for the Receiving Section of the Contest, but will not be eligible for the single operator award. However, if sufficient entries are received a special award may be given to the top scoring receiving club station.

6. Awards: Certificates will be awarded to the highest scorer in each Call Area. Further certificates may be awarded at the discretion of the Federal Contest Committee.

Note: The Federal Contest Committee emphasises the need for strict observance of Rule 9 in the Transmitting Section and Rule 3 in the Receiving Section.

CONTACTS WANTED FOR SCHOOL RADIO CLUB

Shown in the photograph are two well-known junior operators, John (at left) and Mick (right), at the St. Joseph's Technical High School Radio Club station, VK2AXK/P. It is a "junk-box" rig, 40 watts to a 6146, diode antenna.



The boys are on 40 metres nearly every day at 1245 and 1545 hours, but the bands are not well populated at that time of day, so anyone who can give the station a call will be doubly welcome.

WANTED!

ARTICLES

Can you write an article for "Amateur Radio"? How about one for Hints and Kinks?

CORRESPONDENCE

(Continued from Page 14)

articles. It is clear and concise and should help everyone in need of a plan to overcome Amateur interference to t.v. reception.

One comment I wish to make regarding the article is with respect to using the g.d.o. as an absorption wavemeter for the detecting of spurious signals.

It would appear that where the Amateur has used a g.d.o. for this purpose, the amount of sensitivity attached to the instrument is often lacking, as instanced in a case recently where a well known commercial make could register a dip at 200 Mc. in the final tank but no trace could be located using same as a wavemeter, yet the fourth harmonic from 50 Mc. caused severe cross hatch on Channel 9 over 150 ft. away.

However, using a super regenerative receiver (well shielded) an 89 signal was heard over 20 ft. away. It would appear that even a simple superregen. could be used as a detector, provided sufficient spectrum could be covered. Another, even better arrangement, could be a modified i.v. signal for assessing a normal i.f. system providing audio output. A metered indication would provide a much more efficient source of identifying spurious signals.

The same instrument might provide, by means of a suitably switched range, comparative measurements of field intensity, both of the Amateur signal and t.v. signal for assessing the amount of spurious signal in the t.v. channel. It can safely be said that even a relatively small amount of signal inside the t.v. channel will cause cross hatch and where it is in relation to the picture carrier and its relative strength will determine the degree of interference.

It would be good policy if each Division could arrange for someone (or some groups) to construct such a device (call it what you may), to assist in the tracking down of harmonics from Amateur Stations.

—L. Poynter, VK3ZGP.

PREDICTION CHART, JUNE '60

Mc. E. AUSTRALIA — W. EUROPE S.R. Mc.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

GMT

E. AUSTRALIA — W. EUROPE L.R.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — MEDITERRANEAN

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — N.W. U.S.A.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — N.E. U.S.A. S.R.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — N.E. U.S.A. L.R.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — CENTRAL AMERICA

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — S. AFRICA

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

E. AUSTRALIA — FAR EAST

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

W. AUSTRALIA — W. EUROPE

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

W. AUSTRALIA — N.W. U.S.A.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

W. AUSTRALIA — N.E. U.S.A.

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

W. AUSTRALIA — S. AFRICA

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
28												28
21												21
14												14
7												7

W. AUSTRALIA — FAR EAST

0	2	4	6	8	10	12	14	16	18	20	22	24
45												45
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7												7

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#

FEDERAL

Fed. President: G. M. Hull, VK3ZS.

Fed. Asst. Sec. Secretary: W. Mitchell, VK3UM, Box 2811W, G.P.O., Melbourne, C.I. Vic.

Federal Councils

New South Wales—Bob Godsal, VK3ARG, Victoria—Alan Elliott, VK3AEAL, Queensland—Bert Hinkler, VK3AO, South Australia—L. E. Duncan, VK3AK, Western Australia—Ron Hugo, VK3KW, Tasmania—E. J. Cruise, VK3ZE.

Papua-New Guinea—Russ Coleman, VK3KX, Fed. Contest Committee: Alex Hubbard, VK7AX, Manager, Box 851J, G.P.O., Hobart, Tas.

QSL Bureau: R. E. Jones, VK3JR, 23 Landale Street, Box Hill, E.I. Vic.

Awards Manager: Alf Klesick, VK3KB, 1 MacFarland Street, Brunswick, N.10, Vic.

NEW SOUTH WALES

President: Ted Whitting, VK3ACD.

Secretary: Norm Beard, VK3ALJ. Address mail to Rooms at 14 Acheson St., Crows Nest, N.S.W.

Meeting Night: Fourth Friday of each month at Science House, Gloucester Street, Sydney.

Divisional Sub-Editor: Max Pletcher, VK3MP, Lot 52, Braddon St., Blacktown.

QSL Bureau: 14 Acheson St., Crows Nest, Frank, N.S.W. VK3ALJ, Manager; assisted by Allan Smith, VK3AIR.

Zone Correspondents: North Coast and Tablelands: Noel Hanson, VK3AHH, Ryan Ave., West Kempsey, Nambucca, N.S.W. VK3AQR, 17 Brooks St., West Wollstone; Colasida and Lakes: H. Hawkins, VK3Y, 211, G. Comfort Ave., Blackrock, W. N.S.W. VK3WHE, "Cambijowa," Forbes; South Coast & Southern: E. Fisher, VK3DY, 2 Oxide St., Warrawong; Sth. Western: J. W. S. Edge, VK3AJC, Wallace St., Coolman; Tamworth: S. Smith, VK3APS, 50 Upper St., Tamworth.

FEDERAL

I.A.R.U. YEAR IN REVIEW

The big event of the year was the successful conclusion of the Ordinary Administrative Radio Conference in Geneva. Although there were several serious threats to the Amateur bands, Amateurs emerged from the conference with practically all the privileges granted under the Atlantic City. The loss of 50 kc. at 40 metres in Regions I. and III. is indeed unfortunate, but the popularity of the amateur broadcasting use of the "exclusive" Amateur segment which remains at 7.0-7.1 Mc.

It is clear even to the casual observer that the entire DX conditions have been excited during the past two years are on their way out, with the downturn in the sunspot cycle. Nevertheless, at times conditions have been very good, and a great many QSOs have taken place internationally on the 10, 15 and 20 metre bands. Conditions should get progressively poorer as these bands during the next few years, but at the same time more DX should be possible on 40, 80 and 160 metres.

While the h.f. bands showed signs of quietening down, experimental-level Amateurs have continued progress on the Very Highs. W6NLZ in California worked KH6UK in Hawaii on 220 Mc. The new record of 2,540 miles, set on July 22, 1959 parallels that for 144 Mc. set a year earlier by SM6ANR and G3KEQ on June 13. W6DQJ and K6AXN held the record on 1215 Mc. November 1959. On cards submitted by W6DQJ and W6LHL, 7 worked 187 miles in the 10,000 Mc. band.

Interest in the Worked All Continents Award remained high, with 1,811 certificates being issued in 1959. Of these, 548 compared with 2,225 total and 998 phone in 1958. There were 105 endorsements for single sideband, 11 for 50 Mc., and five for 3.5 Mc., as against 100, 16, and six respectively. The 100 cards submitted by two W.A.C. applicants represented work done entirely by radioteletype though no special recognition has yet been made up for this mode.

Membership in the Union stood at 54, with no admittance during the year, but an application for membership is presented in this Calendar on behalf of the society in Angola. A portion of the time of six A.R.R.L. employees was devoted to the handling of I.A.R.U. affairs.

—Extract from the I.A.R.U. Calendar.

SUMMARY OF I.T.U. MONITORING REPORTS

Here is a summary of unauthorised stations heard in the Amateur bands during the period May through October, as reported by the International Frequency Registry Office. Stations operating in accordance with the Atlantic City Convention (1947) are not reported.

NOTES

VICTORIA

President: D. A. Wardlaw, VK3ADW.

Secretary: J. R. Lancaster, VK3JL.

Administrative Secretary: Mrs. Forbes, 478 Victoria Parade, East Melbourne, C.2. Postal address: P.O. Box 36, East Melbourne, C.2. Meeting Night: First Wednesday of each month at the Radio School, Royal Melbourne Technical College.

Divisional Sub-Editor: P. D. Williams, VK3JZ.

QSL Bureau: Inwards and Outwards—W.I.A., Vic. Div., P.O. Box 36, East Melbourne, C.2.

Zone Correspondents: Western: W. J. Kinsella, VK3AKW, Magdala, Lubeck; South Western: W. Wines, 48 Cranley St., Warrnambool; Far North Western: M. Folle, VK3GZ, 101 Lemon Ave., Mildura; Midlands: R. Jonsson, VK3ND, Farnsworth St., Castlemaine; North Eastern: T. K. Tennant, Park St., Tatura; Eastern: W. G. Francis, VK3ZCG, 30 Windsor Ave., Moe.

QUEENSLAND

President: W. J. Ratner, VK4PR.

Secretary: S. J. Armstrong, VK4SA, Box 638J, G.P.O., Brisbane.

Meeting Night: Fourth Friday in each month at the State Service Union Rooms, Elizabeth Street, Brisbane.

Divisional Sub-Editor: W. J. Ratner, VK4PR, Willandra St., Alderley, Brisbane.

Stations heard in the Amateur bands only once or twice during the six-month period are not reported either.

Frequency Kc.	Call/QRG	Type of Signal	Nationality
3783	EQD/EQO	Broadcast	Iran
7007	Valladoid	Broadcast	Spain
7009	HPK	Broadcast	Pakistan
7012	APM1	Broadcast	Spain
7014	28K/22/23	Automatic AI	Korea
7050	Calro	Broadcast	U.A.R.
7050		Broadcast	France
7072	Mogadiscio	Broadcast	Somalia
7080	Bangkok	Broadcast	Thailand
7083			
7095	Iosinnina	Broadcast	Greece
7095		Broadcast	Spain
7100		Broadcast	U.S.S.R.
74200	RIF37	Multiplex FI	U.S.S.R.
14265	Tangier	Broadcast	Morocco
14268	UG33	FI (Parasitic)	Israel
14314	Tirane	Broadcast	Albania
		(Harmonic)	
14340	LCP	AI	Norway
21002	VNB48	Automatic AI	Australia
21245	MIR	FI (Harmonic)	England
21390		FI	U.S.S.R.
21450	OLR7A	Broadcast	Czechoslovakia

(The U.S. State Department says that OLU is operating legally at 21,001 Kc. Table, since Czechoslovakia did not sign the Atlantic City Convention.)

—Extract from the I.A.R.U. Calendar.

FEDERAL QSL MANAGER GOING OVERSEAS

Mr. Ray Jones, VK3RSJ, Federal QSL Manager, accompanied by Mrs. Jones, will be leaving the shores of their native land in August for a six months' trip abroad. Ray proposes to call on a few of his DX friends during his trip if his itinerary permits.

During his absence, work renowned short wave listener Mr. H. B. Jones, VK3BSB, will carry on the duties of the Federal QSL office.

Federal Council wish Mr. and Mrs. Jones a successful tour and a safe return in due course.

SILENT KEY

It is with deep regret that we record the passing of:—

VK3VA—W. B. Bridger.

VK6BC—Bert Congdon.

QSL Bureau: Jack Files, VK4JF, Vanda St., Buranda.

Zone Correspondents: Maryborough: R. J. Glassop, VK4BG, 80 North St., Maryborough; Townsville: K. K. Wilson, VK4RW, Hogan St., Stuart, Townsville.

SOUTH AUSTRALIA

President: L. F. Price, VK5OK.

Secretary: J. C. Haseldine, VK5JC, Box 1234K, G.P.O. Adelaide.

Meeting Night: Second Tuesday of each month at 17 Waymouth St., Adelaide.

Divisional Sub-Editor: W. W. Parsons, VK5PS, 10 Victoria Ave., Rose Park, S.A.

QSL Bureau: G. Luxton, VK5XR, 27 Belair Rd., West Mitcham, S.A. (Inwards & Outwards).

WESTERN AUSTRALIA

President: L. Roeger, VK6HR.

Secretary: L. S. Eddington, VK6LS, Box N1002, G.P.O., Perth, W.A.

Meeting Night: Third Tuesday of month at Perth Tech. College Annex, Mounts Bay Rd.

Divisional Sub-Editor: P. Haywood, VK6PH, 2 Barnsley St., Queen's Park, W.A.

QSL Bureau: Jim Rumble, VK6RU, Box F310, G.P.O., Perth, W.A. (Inwards and Outwards).

TASMANIA

President: T. Allen, VK7AL.

Secretary: K. E. Millin, VK7KA, Box 851J, G.P.O., Hobart.

Meeting Night: First Wednesday of each month at W.I.A. Clubroom, 147 Liverpool St., Hobart.

Divisional Sub-Editor: I. Nichols, VK7ZZ, 5 Clarence St., Hobart.

QSL Bureau: J. Batchler, VK7JB, 39 Willowdene Ave., Lower Sandy Bay, Hobart.

Zone Correspondent: North Western Zone—Ray Wong, VK7TL, Northern Zone—Ray Woldon.

FEDERAL AWARD MANAGER RETIRES

After five years of service to the Federal Council as Federal Awards Manager, Gordon Weynton, VK3KK, has due to circumstances beyond his control, found it necessary to relinquish this important post in the W.I.A.

During the five years in office, Gordon has been to the Federal Council the records of Awards—both national and international—the same painstaking care as he devotes to every other activity he has in the other spheres.

On behalf of Federal Council best wishes are extended to Gordon and sincere thanks for the work he has carried out.

Alf Klesick, VK3KB, is taking over the Awards Manager's duties from June, 1960. In Alf we have a man who is well acquainted with the necessary knowledge for this duty and we ask all those who submit cards in confirmation of the various Awards to do so in accordance with the rules pertaining to the particular Award, thus making the work very much easier, at the same time precluding the possibility of delays in receiving your certificates.

Claims for Awards are now to be forwarded to Alf Klesick, VK3KB, 1 MacFarland Street, Brunswick, N.10, Vic.

FEDERAL QSL BUREAU

The annual contest of the L.A.R.E. (Brazil) is set down for September this year. For cards from 0001Z Saturday to 2400Z Sunday on the first week-end in that month. For phone, the entries are similar but on the second week-end. Logs to "L.A.R.E. Contest Commission," Caixa Postal 2333, Rio de Janeiro, Brazil. Full details may be had from the Federal QSL Bureau.

For the information of the numerous applicants for the 1959 issues of "CQ" mentioned in these notes in May of "Amateur Radio," I have to advise that the first applicants were VK3DI and VK3QJ. As their letters arrived in the time of the contest, they were divided between them. Glad to know that somebody reads these notes.

One of the most sought after South American DX stations is O.A. who operates under the call Evert Kaleveld, is ex-PA0XE and ex-OA7L. Evert is a railway engineer employed on the shortest railway in the world. It reaches a top altitude of 13,550, record 13,550, feet above sea level. O.A.K.F. uses only 23 watts to a long wire antenna which he finds is all that is necessary to contact the world. He will send all contacts and useful reports via P.O. Box 538, Lima, Peru. (BR59159).

Since Willis Island was constituted a separate country, have had many requests for the present address of VK4SQ who was located at Willis Island in 1948. Can anyone supply please?

—Ray Jones, VK3JR, Manager.

NEW SOUTH WALES

Falling on the eve of the Anzac Day holiday week-end, the April meeting of the Division could not be opened as only 35 full members were present. The attendance totalled 44 and included Eddie VK5OW from Darwin.

Those who failed to attend missed an excellent lecture by the Secretary, Mr. J. Leaver, on "Wireless Direction Finding." In his whimsical manner, Joe spoke of the early experiments in wireless direction finding and traced the development of the modern direction finding systems which Joe described for Amateur use are simple to build and effective in use. The lecture is available in 10, 15 and 20 mm. slides of the diagrams are also available at 10/- per set.

The country Amateur Radio Clubs in VK2 are continuing to increase both in activity and numbers. Best of the club news comes this month from the Griffith Amateur Radio Club. Activity in this club is up with members travelling scores of miles to attend meetings. The A.O.C.P. class which the club is conducting has attracted a housewife (Mrs. Leaver) and her fourteen-year-old son who travel 12 miles to attend the classes. Congratulations, Mrs. Leaver, and your son.

Wal WAJZJ celebrated his 75th birthday on 30th May. Readers are reminded that Wal was the first Secretary of the Wireless Institute when it was founded in Sydney 50 years ago. The Divisional Council cordially congratulated and best wishes to our senior member.

The various sub-committees of the Division have seen in and are working steadily to improve their respective Clubs. The VK2 Division is assuming gigantic proportions and Council is eager for volunteers to assist in the multifarious tasks of the management of the Division. Can you help?

HUNTER BRANCH

No doubt by now all those naughty boys who have been causing t.v.i. have suppressed their unwanted harmonics (at least those who attended the lecture by Hans ZAOU at our last month's meeting). Police Radio Officer, who presented and my spies tell me that they constructed the filters quoted by Hans and their installation caused no serious side-effects.

Those present were 2RJ, 2AYL, 2CS, 2ANG, 2AXX, 2ZL, 2ZMO, 2ZDF, 2ZNNW, 2XT, 2FF, 2VU, 2CN, 2QB, 2JE, 2SF, 2AQR and associates Sutherland, Finch, Storer, Gray, Barry, Mulvey, and the many others. The 2ZNNW Club and Webster, Harry ZAFU sent his apologies. Most to wet up Singleton way as Geoff 2VU is an all time infrequent visitor. The 2AYL Club, where your President, Lionel, has joined the select circle of pipe-puffers and not the Water Board type either?

To the responsibility of operating 2AXW on Monday nights a roster is being drawn up. 2SF and 2AQR have joined the panel but a third is wanted. However, if conditions do not improve no one will be needed as there will be nothing to re-broadcast and even if there was, there would be no one to receive it. The meeting concluded when your V.P. Varley thanked Hans for his constructive and informative discourse.

At present your Secretary, Gordon, is on holiday in Sydney. So, on 10th May, Officer Stuart, thumbed a ride to Melbourne—hope someone warned them. They tell me the reason why Les RJ is not on so much is because he is busy building a bus shelter home incorporating a shack of course.

Despite the publicity, there was a very poor support of the social meeting to deal with Blackie and Bill. The boys—well, the boys—the willing few need your help, support and ideas.

Now and then we get surprise from Jack 2KQ. When he calls 2AXW. As usual 2XT, "Bring-em-back-alive Bill," did himself proud at Urunga; came second in the scramble and then the merry Chalky 2ZL did better than 2FF as navigator. Up there, Jack 2ADT gave a call and wondered what was wrong with his meter. Well, he discovered that his little daughter had hung wet nappies on his feeders.

Ivan 2AIM and his retinue called in at 2AQR on his way back from Urunga and made his mouth water with the activity up there. No need to wonder who the lucky boy was, Ernie Erica? Was contemplating going to Urunga next year, but find that Easter Saturday is April 10th. Well, that mob up there, anything is liable to happen.

Many of you probably remember that s.w.l., "Key-Hole Harry"; well, he now has a ticket, 2ZCK; congrats, Harry. Was very sorry to see in M.R.K. that Don Kark VK2NO is listed in the cancelled call sign.

Next meeting, chaps, is at the usual place, same time, and the date—June 10. See you there?

VICTORIA

MORALE AND SECTIONS PRICKING

Red Riding Hood may have said "What a big mouth you have Grandma" and managed to get away with it under different circumstances to that related in the old fable. Like the heroine I am suffering a comparable fate for having opened my mouth at the recent VK3 meeting and henceforth your Divisional notes come from the extremely scratchy pen of 3LZ.

I'm sorry complaining, mind you, but like the press at the "Chronicle," I can only make an "impression" if I am fed with paper—paper containing information, ideas, criticism or even downright libel!

Not that I want to conduct a lonely heart's column—far from it—but I can only reflect the general feeling of Amateur Radio, its development and progress through you or your Zele's ideas.

You know, one thing that's struck me since I have been able to attend a couple of meetings here in the city is the grim determination of your Divisional Officers to really get things moving in VK3. I suspect you will find me lethargic on the part of some country members to state their case.

This plea has been stated, printed and undoubtedly prayed, many, many times, but I suppose that if you aren't informed of the doings of the Institute, particularly if you have some comment, it will be as good as being browned off. I know, I lived in the country!

Your Council is young, enthusiastic and has ideas of its own. Your Editor has plans, your 3WT secret writer has plans and your Editor has ideas that are designed to further Amateur Radio in this Division if not the Commonwealth. So then, if you want to know what goes on, listen to RWI and if its sufficient influence is to be repeated in print, it will be done.

Incidentally, what have you been thinking of the broadcast lately? 3AKJ writes the script as you know, and I hope you are waiting for Xmas Eve. He wants you to let him know how it's affecting you.

GENERAL AND PERSONAL

You know, Angus 3IY is a staunch adherent of s.a.b. He must have felt like a missionary confronting the lost tribe the other night at the VK3 meeting. I don't know what impression on the virtues of s.a.b. v. a.m. was presented at the beginning of the evening, otherwise the clergy eyed each other and would in every poor sabbath General Business began at approximately 2330.

However, back to the s.a.b. Angus rather delibed at the point of view of the advantages of sideband at great length, and very ably presented the technical details of his filter rig which is essentially the same as his described in the recent issue of "QST."

The best was yet to come, for when Angus had dealt with the technical queries, the stumbling and otherwise confused c.w. and a.m. men were jolted to awareness by a confusion of words from several quarters. Essentially, the verbiage dealt with the problem of "glaring" caused by s.a.b. stations receiving a normal a.m. receiver and why couldn't, or rather, why should s.a.b. stations be allowed all the credit in the matter of the band unless for a.m. stations. The minority, etc., etc.

The ensuing row was possibly like the state of affairs on 40 mhz when the AC4 came on, and from the front of the room a voice called out, "Code could be heard, viz. the Amateur is balanced even to his modulators, to which the quick return came that the speaker was biased and made a nervous approach to the problem, I think, but I'm not positive.

They were still at it at the break before general business, and whilst inspection of 3IY's transmitter was in progress.

General business was, of necessity, brief, but the problem of QSL distribution was raised and discussed and much time was spent on it. It was used here too, but final revelations will have to wait until next meeting. However, it can be said that the question is whether the present system of "Federal" QSLs is satisfactory or not. It was pointed out that there is no collective Bureau as such in U.S.A. and that it goes to show that the "Federal" Bureau may be the answer to the problem here in VK. Comments for and against will be welcome before the next meeting.

We were pleased to welcome Cummings from the Army Apprentices School, together with one of the lads from Balcombe. Visitors are always welcome and the prospect of a continuing contact in future meetings, everybody will be assured of a pleasant evening. XLYs note—the OM will be late.

Young V.A. was being given in Victoria Parade. Repairs have been found necessary—

report has it that earth tremors had something to do with it, although the source of the tremors wasn't stated. Anyway, tender for the job has been accepted and we look forward to having the rooms in fine shape once again.

Some individual comment has been made about disposals. Firstly, the administration of R.A.A.F. disposals has shifted from VK3 to VK4. Perhaps this is why it is alleged that V-chaps are getting the goods. We are not VK3. For my own part I would like to suggest that a Commonwealth Pool be set up from which allocations to the States could be made. There could be a central fund, be sure, but if it would give equality the necessary machinery would not prove too difficult.

Secondly, the Disposals Committee in VK3 could appear in 3S3. At the present time these two chaps are gathering quite a good selection and it is hoped to make an official handout in about three months.

LIBRARY

Starting from next month it is hoped that an abstract of technical do-it-yourself articles will be included in the magazine received by this Division will be included in these columns or elsewhere in the magazine.

The advantages of this are obvious. If the tendency is to drop the magazine, the obvious thing to do is to drop me or Mrs. Forbes a line and if it's available, it will be forwarded to you. Of course the usual conditions of borrowing will apply. I am happy to be asked to give you a partial list of magazines received, and reference books in the library.

COUNCIL ITEMS

It is hoped that a report of the work of the VK3 Council will be a regular feature of these notes. Under the chairmanship of President David Wardlaw, Council had one of its liveliest discussions on a number of topics at its last meeting.

The most important matter raised was, of course, the Federal meeting at Easter. Council heard a detailed report from Federal Councillor, Allan Elliot.

As you know, VK3 moved: "That it will be recommended to the Federal Institute of Australia to press for an administrative system that embodies the principle that frequency allocations and regulations are made by or on the recommendation of an independent interested body or tribunal before which interested persons or bodies shall have the right to be heard." The Federal Council's recommendation is made that affects them."

This was one of the motions carried by Federal Council, and now goes to be ratified by the various Divisional Councils. The importance of the matter, VK3 Council has appointed a sub-committee to advise on the problems involved. Michael Owen was appointed chairman.

Another sub-committee was appointed to report on methods of improving the attractiveness of the Institute. One proposal that the sub-committee is expected to consider is a proposal that a new improved technical library should be set up.

Council recommended the reappointment of the various Divisional Executives for another year, namely, President G. M. Hull, W. T. S. Mitchell, G. Glover, D. Rankin, P. Stranghair and B. Brown.

Council also discussed the next State Convention, which will probably be held in November; W.I.C.E.N., including the possibility of incorporating a new section on well discussed finances at considerable length.

Hardly surprisingly it was quite late when Council eventually adjourned.

MELBOURNE UNIVERSITY AMATEUR RADIO CLUB

Formed only recently, this group looks like promising to produce some interesting topics for the ultimate in secret weapons. For how could it miss out with characters like "Pro" 3Z1S and 3AKJ on the committee! I understand that Ron 2ADW was also co-opted to complete the quorum. 3Z1S had better look to it to find some with some information from time to time, otherwise I'll reveal some of his "schoolboy" scandals!

IN CONCLUSION

My high flying spies tell me that all sorts of conversational topics are being taken place on the bands these days! I only suggest that these chaps who indulge in insurance and h.p. comparisons find the subject of insurance a bit more on the floor space. Then there'll be some scatter and it won't be forward!

Having thus exhausted the space I look forward to hearing your news and views for next month. 73, 3LZ.

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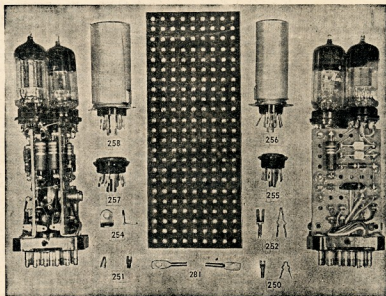
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BRISBANE AND DISTRICT

TOWNSVILLE

Page 23

fun with a 22 on the front lawn using a rod antenna which is available for fishing if the conditions are baw.

Did you hear the truth of Luke 5:11 and the car that backed into his front-end? A little bird tried to tell me but got gossamer. I am QRM at 8:00 AM as at 8:00 AM Luke was not hurt beyond his dignity. Glad I wasn't the backing driver!

Bob SRI joined in the meele last week when conditions were medium only and was the strongest on the air; understand Bob has the 540 there with all its "gear". Please note that Jan 5QX is on the air each Thursday night at 7.30 p.m., 40 mx, to take any queries from you; he is far more cheerful and easier on the Council this year and is there to help you.

Just in case the v.h.f. boys miss this for the issue, it is advised that VKOWH, who is at Marquarie, is putting a tape signal on the air nightly from 1830 to 1930 C.S.T. on 50.19 Mc. Who will be the first?

Mr. Gambler reports that at a recent meeting, Bob Tester came to light with a picture of a multi-element v.t. antenna with the query how it is fed. The answers ranged from eye dropper, spoon, force, to 500 ohm ribbon.

Erg's XVYL makes too good a sponge to feed to antennae any way, so the boys had it instead. Stewart M. G. forges the antenna, the work may be safer; Leo 5GJ now has the tower to bils and ready to re-assemble. Claude 5CH and Tom 5TW again on 40 to good result, not many Col 5CJ who helps himself to sponge cake and 40 mx.

A film evening organised by Oliver Madex and Claude 5CH provided a most enjoyable evening (mostly water) and the heavy-side layer at their last monthly meeting. Doc 5MD, who with party was en route to Canberra, dropped in on the boys, much to their delight.

Erg 5KU had trouble with the rig after a spell from it to find such section progressively jacking up. Gremmie 5Z, nothing.

As a closing shot, the automobile accident had a calming influence on only one part of the team. The right foot for the left foot is less kick available from that side. Very strenuous efforts are being made now to learn the correct and effective use of the left foot for safety features by that member so it won't be long now. Anyway, it was very good aim to make certain of a direct hit on Percy, who will try it out even at this stage of education.

WESTERN AUSTRALIA

The Annual General Meeting of the Institute, which was held on 19th April, brought the usual attendance at the Friends St. Hall, South Perth. At this meeting, the new constitution of this Division was carried unanimously, and now means that anyone who has any interest in radio and electronics can join the Institute as an Associate at the subscription rate of 30/- per annum. This is what we have long waited for and we already have a long waiting list of waiting to join. Copies of the Constitution will be forwarded to each member for their retention.

Also at this meeting, the President, GHR and the QSL Manager GRU tendered their reports. GHR was very pleased to report that membership had grown to 137 and the circulation of the QSL card returned to 130 in the last year term of office. Through the past year lectures were given by VKOAT on Antarctica, R. Hilliard on electronic education, and the QSL card was given to the public. Travels through world cities, 5AG Questions and Answers, 5LS on three channel carrier telephone, and F/O. Lance Howard, D.F.C., on the Dam Busters.

Jim GRU reported that there were not as many cards passed through the Bureau as the previous year which was a record. The assets of the Bureau stood at 1966, totalled £11/10 and stamps totalled £4/2/11. This is a good way to end the year, so on behalf of the Bureau, I would like to thank you to evaluate Lou and Jim on the splendid job they have done during the past year, and also the committee retiring. Council for the part they have played in helping the waters to pass under the bridge smoothly, and quite a volume has passed this last 12 months.

It is that time of the year when the VKQ Division will at last have their own building to be used by the members for housing equipment and conducting meetings. Thanks to Col 5CG.

The Federal Council will be to Melbourne on Easter Saturday to attend the Federal Council at which frequency allocations were discussed and agreed.

A Memorial to the Silent Keys of the VKQ Division has been constructed by 6AG and 5WS to be displayed in a prominent position. The cards to hand are present are 6FJ, Fred

OBITUARY

BERT CONGDON-VK6BC

It is with regret that we have to advise of the passing of VK6BC, Bertie Congdon. Many an Amateur of VLF owes a debt of gratitude to Bert for the enthusiasm that was always applied in the imparting of the necessary knowledge to achieve 30.0 C.B. He joined the Radio Radio Society, the first Radio Club in Australia, and saw it grow until it has become the Radio Society of W.A. Bert served in the first World War which left him with an impairment in his health. But even in World War II he conducted several classes of officers. Bert spent almost his whole life in the Postal Service, and retired a couple of years ago. Even then he was never idle, and only a week before his death he was heard on the air.

Sincere sympathy is extended to his wife, children and grandchildren.

Kemble; 6MW, W. Weston; 6MN, S. J. Madden; 6FT, F. Tredrea; 6EL, E. Langenscheidt; 6BN, A. F. Stevens; 6RT, L. Trunfull; 6GJ, J. Goddard; 6GR, A. Rippet; 6CA, C. Bold. These Silent Keys, who have passed on, were many friends who remember them and what they did for Amateur Radio. It was suggested by 6AG that the members of the club, their card placed on the board, would be kindly forward it to him (IMI—what did you say QRM, QRN, etc., very bad).

Congratulations to Fred 6UF on taking into himself a VLF and converting her into a XVYL. We all trust Fred that you both will be very happy and have long life together in harmony. Please don't forget Amateur Radio. Fred is building a very nice home out in Cannington and his three tall white masts are a very impressive sight.

Here we must reminis for a moment for the other day 6MO was heard on 40 mx. 6MO was, in one way, a terrific call sign of many years. It was retained now. It retained now by Alen Parks (who had spent many years there in an amateur capacity), a happy reminder of nearly 20 years' instruction of the original Magnet Observatory. It is well that such historical calls should be carried on. Here we take the opportunity of welcoming Mr. Peter Throngton Island a new member of the W.I.A.

The Easter week-end brought many portable and mobile operators to Perth. It was a lovely week-end for it. Among those heard were Bernie 6KJ, Francis 6WD, Harry 6ZZ, Herb 6KO, John 6EW, Cole 6CS, Tom 6TK, John 6J and 6BU.

Peter HP7CC/MM, aboard the tanker Alvenus, was heard on 80 mx around the coast of W.A. in the Derwent Estuary given State. He was worked and kept busy by Tan 6CL, Clem 6CW, Wally 6AD, Francis 6WD, Skipper 6WS and Pat 6PH. Signals faded out both ways when Peter was of Experience in the Night, and we worked him again on the way back.

In conclusion, I must mention the Slow Morning which will start on the 12th (well) very soon, and the times will be for one hour after the News Sundays, on 40 mx, seven to eight p.m. on Sundays, Tuesdays and Thursdays on 80 mx, so please give us your support.

It is with regret that we announce the passing of Bert Congdon, 6BC. Many VK6s owe their VLF to Bert, and it is a pity that we never any trouble when it came to helping anybody in Amateur Radio.—6PH.

TASMANIA

Paul TPJ was instrumental in affording some of our members the opportunity to perform valuable service to those unfortunate people who suffered damage to their wireless rx's and radiograms as a result of the devastating floods in the Derwent Valley. This was a very busy week-end, and our gratitude is due to both Paul and the other helpers for helping to maintain the good name of the Institute.

Chas TCH has removed to Lenah Valley and should now QRM RUPE RRM and Edgar TRY much more effectively. Ted TEJ, our Federal Councilor, returned quite a debt of the water week-end to Journey to Melbourne to attend the Extraordinary Federal Council meeting held there. He had the intention to use the four-day break from work to continue his home renovations, so we can appreciate even more his readiness to attend this meeting at such short notice.

Myles TFM is now the envy of many of us after receiving a QSL card from a VP3. I have not even seen one of these very rare DX stations. Jack TVE has got his G4ZU beam up

in the air on a 25 foot tower. His tests show locally a back to front reading varying by four points. A little more adjustment to bring the 14 Mc. portion of the beam up to pitch, and Jack should do even better in DX contexts in the future than he has done over the years.

The only VK7 Amateur to suffer damage or loss from our severe floods was John YAG. He tells me that three houses on his property at Bushy Park, were destroyed and that the loss about a sheep downstream.

Our May Divisional meeting was fortunate to have Mr. Hutchins, of the Marconi Co. address us on Television Studio Equipment. Not only did he illustrate the equipment diagrammatically, but he produced certain equipment exhibits and altogether it was a very successful and most enjoyable evening. Tom TBT has again equipment capable of putting out a signal, so he should be heard much more frequently in future.

HAMADS

1/- per line, minimum 3/-.

Advertisements under this heading will only be accepted from Institute Members who desire to dispose of equipment which is their own personal property. Copy must be received by 8th of the month. The advertisement must accompany advertisement. Calculation of cost is based on an average of six words a line. Call signs are now permitted in Institute members' advertisements not accepted in this column.

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SELL: Advance E2 Sig. Gen. 100 Kc. 100 Mc., as new. B28 Comm. Receiver, good cond. VK5KD, 95 Fairfield Rd., Elizabeth South, S.A.

SELL: Ant. Coupler, new, from Tiger Radio (England), multiband tuner "Z Match" type, in hammettome case, £13. VK3JK. Mornington 3183.

SELL: Comm. Rx SX42 505 Kc. to 108 Mc. Offers wanted to £100. S. Widgery, 39 York St. West, Ballarat, Vic.

SELL: Membership in W.I.A. Apply to your Divisional Secretary for full details.

SELL: RI155A Communication Receiver, good condition, £12/10/-, Aegies KC4, 4-band Tuning Unit, a complete factory wired front-end; i.f., osc., mixer stages, bandsread 80, 40, 20, 15, 10; bandsand and bandsread 55/1 slow motion drive assemblies and calibrated dials with values and circuit, £12/10/-, VK3ZCP.

SELL: Surplus equipment. Eddystone 680 receiver, ART13 transmitter with 28 volt power supply and manual. TA12 transmitter, FS6 transmitter, port. pitch motor. What offers? N. Templeton, Coleraine, Vic.

WANTED: American S.b. Transmitter, prefer ABLA, HT-30 or HT-32 type. Details to VK2AI, Reg. Brook, Gosford.

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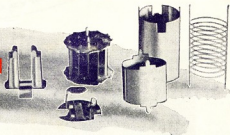
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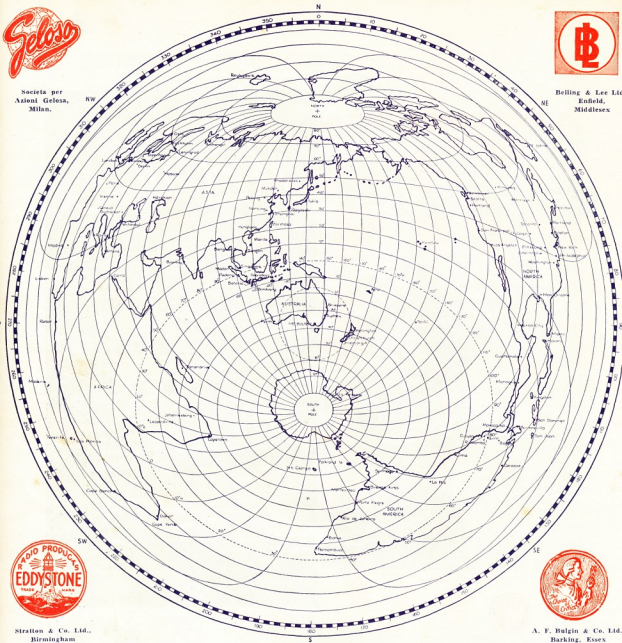




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